

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

**UNITED STATES PATENT AND TRADEMARK OFFICE**

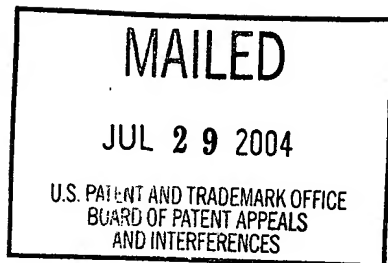
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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

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Ex parte RAINER HOCKER  
and  
JOSEF HAUSLADEN

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Appeal No. 2004-1321  
Application No. 10/002,633

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HEARD: July 15, 2004

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Before COHEN, STAAB, and NASE, Administrative Patent Judges.

NASE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 2, 5 and 6, which are all of the claims pending in this application.

We AFFIRM-IN-PART.

BACKGROUND

The appellants' invention relates to an impingement flow for wall parts (specification, p. 1). A copy of the claims under appeal is set forth in the appendix to the appellants' brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Ashiwake et al. (Ashiwake)	5,365,400	Nov. 15, 1994
Wettstein	5,586,866	Dec. 24, 1996
Cermak	GB 849,255	Sept, 21, 1960

Livingood et al., "Heat-Transfer Characteristics of a Single Circular Air Jet Impinging on a Concave Hemispherical Shell," Report No. NASA TM X-2859, August 1973  
(Livingood)

Claims 1, 5 and 6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Cermak.

Claims 1, 2, 5 and 6 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cermak in view of Ashiwake.

Claims 1, 2, 5 and 6 stand rejected under 35 U.S.C. § 103 as being unpatentable over Livingood in view of Wettstein.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the answer (Paper No. 14, mailed October 1, 2003) for the examiner's complete reasoning in support of the rejections, and to the brief (Paper No. 13, filed September 3, 2003) and reply brief (Paper No. 16, filed December 1, 2003) for the appellants' arguments thereagainst.

#### OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. As a consequence of our review, we make the determinations which follow.

#### **The anticipation rejection**

We sustain the rejection of claims 1, 5 and 6 under 35 U.S.C. § 102(b) as being anticipated by Cermak.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

Verdegaal Bros. Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir.), cert. denied, 484 U.S. 827 (1987). The inquiry as to whether a reference anticipates a claim must focus on what subject matter is encompassed by the claim and what subject matter is described by the reference. As set forth by the court in Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984), it is only necessary for the claims to "'read on' something disclosed in the reference, i.e., all limitations of the claim are found in the reference, or 'fully met' by it."

Claim 1 reads as follows:

An impingement flow for a wall part, in which a plurality of impingement orifices are arranged areally in a plane or curved carrier, the carrier being arranged at a distance from the wall part, and an impingement area, to be cooled or heated, of the wall part being designed as a relief, wherein

- that side of the wall part which faces the impingement jet is provided with a number of troughs arranged next to one another, said troughs being in the form of spherical cups or similar rotationally symmetrical forms, one impingement jet per trough being provided, which impingement jet strikes a trough base at least approximately perpendicularly, and
- that side of the wall part which is remote from the impingement jet is of at least roughly plane design.

Cermak's invention relates to a method of and to arrangements for cooling the walls of combustion spaces and other spaces subject to high thermal stresses, such as combustion chambers, melting chambers and the like. In the arrangement shown in Figures 1 and 1A, the wall 1 defines a combustion space or other thermally highly stressed space which is divided into individual cooled wall members. Each member forms at its outer side a collecting chamber 6 and at its inner side a distribution chamber 4, both chambers having either an independent inlet or outlet for the cooling medium respectively. In the example shown it is the inlet 2 and the outlet 3 for the coolant. The latter acts on the wall 1, to be cooled, by means of several concentrated jets emerging from nozzles 5. The nozzles 5 are attached to the distribution chamber 4 for the coolant. The cooling medium strikes the cooled wall 1 at a relatively high velocity substantially at right angles, is collected in the collecting chamber 6 and withdrawn through the outlet 3 from the wall member. In the arrangement shown in Figure 2, the metallic partition 1 of the combustion or other thermally highly stressed space is provided with cylindrical cooling pockets 7. The nozzles 5 are connected to the distribution chamber 4 and protrude into the cooling pockets 7. The outflowing coolant strikes at a relatively high velocity the bottom of the cooling pocket 7 in a similar manner as in Figures 1 and 1A. The cooling medium flows from the cooling pocket 7 immediately into the collecting chamber 6, from where it is withdrawn through the outlet 3 for further use, e.g., as combustion supporting medium.

The appellant argues (brief, pp. 9-10; reply brief, p. 2) that the examiner has incorrectly interpreted the claim recitation "similar rotationally symmetrical forms" to include the cylindrical pockets described in Cermak. We do not agree.

The United States Patent and Trademark Office (USPTO) applies to the verbiage of the claims before it the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the appellant's specification. In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). See also In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983).

The appellant's specification teaches the following:

- (1) a number of troughs 4 in the form of spherical cups are provided in the wall 3 (Figure 1, p. 5);
- (2) various other possible geometrical forms may be used to form the troughs 4. Figure 2a shows an ellipse shape which is generated by rotation of the corresponding segment about the axis U. Figure 2b shows a shortened cycloid shape which is generated by rotation of the corresponding segment about an axis U offset in parallel from the

impingement-jet axis. Figure 2c shows a trapezoidal trough which has a plane base and whose walls may be made straight or curved (p. 6); and

(3) the heat transmission coefficient on the surface of the appellant's troughs is roughly equal to that which would prevail on the base area without the trough. This in turn is in contrast to the known elements having areas running perpendicularly to the wall, in which elements a considerably reduced heat transmission coefficient is to be expected (p. 7).

In our view, the broadest reasonable meaning of the phrase "similar rotationally symmetrical forms" as it would be understood by one of ordinary skill in the art, taking into account the enlightenment afforded by the appellant's specification and drawings, is that it includes within its scope a trapezoidal<sup>1</sup> trough with a plane base and straight walls running perpendicularly to the plane base.<sup>2</sup>

The cylindrical pockets of Cermak run perpendicular to the wall. Thus, each cylindrical pocket defines a trapezoidal trough having a plane base and a straight wall running perpendicularly to the plane base. Accordingly, the claimed "similar rotationally

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<sup>1</sup> A trapezoid is a quadrilateral having two parallel sides. A quadrilateral is a plane figure with four sides and four angles. Thus, a rectangle is a trapezoid.

<sup>2</sup> Limitations are not to be read into the claims from the specification. In re Van Geuns, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993) citing In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

symmetrical troughs" are readable on the cylindrical pockets of Cermak which are each formed by rotation of a rectangle (i.e., a trapezoidal) about the axis of the cylinder.

For the reasons set forth above, the decision of the examiner to reject claim 1 under 35 U.S.C. § 102(b) as being anticipated by Cermak is affirmed.

The appellants have grouped claims 1, 5 and 6 as standing or falling together.<sup>3</sup> Thereby, in accordance with 37 CFR § 1.192(c)(7), claims 5 and 6 fall with claim 1. Thus, it follows that the decision of the examiner to reject claims 5 and 6 under 35 U.S.C. § 102(b) as being anticipated by Cermak is also affirmed.

### **The obviousness rejections**

We will not sustain the rejection of claims 1, 2, 5 and 6 under 35 U.S.C. § 103 as being unpatentable over Cermak in view of Ashiwake. We will also not sustain the rejection of claims 1, 2, 5 and 6 under 35 U.S.C. § 103 as being unpatentable over Livingood in view of Wettstein.

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531,

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<sup>3</sup> See page 9 of the appellants' brief.



1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). A prima facie case of obviousness is established by presenting evidence that would have led one of ordinary skill in the art to combine the relevant teachings of the references to arrive at the claimed invention. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988) and In re Lintner, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). When it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether there is any suggestion or motivation in the prior art to make the selection made by the appellants. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. The extent to which such suggestion must be explicit in, or may be fairly inferred from, the references, is decided on the facts of each case, in light of the prior art and its relationship to the appellants' invention. As in all determinations under 35 U.S.C. § 103, the decision maker must bring judgment to bear. It is impermissible, however, simply to engage in a hindsight reconstruction of the claimed invention, using the appellants' structure as a template and selecting elements from references to fill the gaps. The references themselves must provide some teaching whereby the appellants' combination would have been obvious. In re Gorman, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991) (citations omitted). That is, something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. See In re Beattie,

974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992); Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick Co., 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984).

Ashiwake's invention is directed generally to cooling of an appliance, and more particularly, to heat sinks and a semiconductor cooling device using the heat sinks suitable for cooling semiconductor chips having a high heat dissipating density or semiconductor packages. Figure 1 depicts one embodiment of the invention in which a multiplicity of tabular fins 2 formed with through-holes 1 are laminated via radially provided spacer member 3, thus forming a heat sink. The through-holes 1 cooperate to form an axis-directional path 5 for leading a cooling fluid 4 to the central part of the heat sink. A fin 8 constituting a bottom plate of the heat sink is bored with no through-hole and serves to blockade the axis-directional path 5. The tabular fins 2 are laminated to form passageways 7 for flowing the cooling fluids 6 in the radial directions. Figure 8 depicts a second embodiment of the invention in which tabular fins 2 and fin 8 are formed to have curvatures to assume a spherical surface which causes centrifugal forces to act on the radial flow along the axis-directional path 5.

In our view, there is no suggestion in the combined teachings of Cermak and Ashiwake to have modified Cermak's pockets to be spherical as set forth in this

rejection (answer, p. 4). The only possible suggestion for modifying Cermak in the manner proposed by the examiner stems from hindsight knowledge derived from the appellants' own disclosure. The use of such hindsight knowledge to support an obviousness rejection under 35 U.S.C. § 103 is, of course, impermissible. See, for example, W. L. Gore and Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

For the reasons set forth above, the decision of the examiner to reject claims 1, 2, 5 and 6 under 35 U.S.C. § 103 as being unpatentable over Cermak in view of Ashiwake is reversed.

Likewise, after reviewing the combined teachings of Livingood and Wettstein there is no suggestion to have modified Livingood to arrive at the claimed subject matter as set forth in this rejection (answer, pp. 4-5). Once again, the only possible suggestion for modifying Livingood in the manner proposed by the examiner stems from hindsight knowledge derived from the appellants' own disclosure.

For the reasons set forth above, the decision of the examiner to reject claims 1, 2, 5 and 6 under 35 U.S.C. § 103 as being unpatentable over Livingood in view of Wettstein is reversed.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 5 and 6 under 35 U.S.C. § 102(b) as being anticipated by Cermak is affirmed; the decision of the examiner to reject claims 1, 2, 5 and 6 under 35 U.S.C. § 103 as being unpatentable over Cermak in view of Ashiwake is reversed; and the decision of the examiner to reject claims 1, 2, 5 and 6 under 35 U.S.C. § 103 as being unpatentable over Livingood in view of Wettstein is reversed.

No time period for taking any subsequent action in connection with this appeal  
may be extended under 37 CFR § 1.136(a).

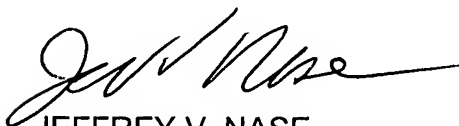
AFFIRMED-IN-PART



IRWIN CHARLES COHEN  
Administrative Patent Judge



LAWRENCE J. STAAB  
Administrative Patent Judge



JEFFREY V. NASE  
Administrative Patent Judge

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ROBERT S. SWECKER, ESQ.  
BURNS, DOANE, SWECKER & MATHIS, L.L.P.  
P.O. BOX 1404  
ALEXANDRIA, VA 22313-1404

JVN/jg